Appl. No. 10/554,099

Atty. Ref.: 1114-218

Amendment After Final Rejection

Monday, December 21, 2009

## **AMENDMENTS TO THE CLAIMS:**

Please amend the claims as follows:

1. (Previously Presented) An electrophotographic photoreceptor comprising:

a conductive substrate formed of a conductive material; and

a photosensitive layer disposed on the conductive substrate and containing oxotitanium phthalocyanine having a crystal form showing a diffraction peak at a Bragg angle  $2\theta$  ( $2\theta \pm 0.2^{\circ}$ ) of 27.2° in an X-ray diffraction spectrum and an enamine compound represented by the following general formula (1).

wherein Ar<sup>1</sup> and Ar<sup>2</sup> each represent an aryl group or a heterocyclic group which may have a substituent; Ar<sup>3</sup> represents an aryl group which may have a substituent, a heterocyclic group which may have a substituent, an aralkyl group which may have a substituent, or an alkyl group which may have a substituent; Ar<sup>4</sup> and Ar<sup>5</sup> each represent a hydrogen atom, an aryl group which may have a substituent, a heterocyclic group which may have a substituent, an aralkyl group which may have a substituent, or an alkyl group which may have a substituent, but it is excluded that Ar<sup>4</sup> and Ar<sup>5</sup> are hydrogen atoms at the same time; Ar4 and Ar5 may bond to each other via an atom or

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an atomic group to form a cyclic structure; "a" represents an alkyl group which may have a substituent, an alkoxy group which may have a substituent, a dialkylamino group which may have a substituent, an aryl group which may have a substituent, a halogen atom, or a hydrogen atom; m indicates an integer of from 1 to 6; when m is 2 or more, then the "a"s may be the same or different and may bond to each other to form a cyclic structure: R<sup>1</sup> represents a hydrogen atom, a halogen atom, or an alkyl group which may have a substituent; R<sup>2</sup>, R<sup>3</sup> and R<sup>4</sup> each represent a hydrogen atom, an alkyl group which may have a substituent, an aryl group which may have a substituent, a heterocyclic group which may have a substituent, or an aralkyl group which may have a substituent; n indicates an integer of from 0 to 3; when n is 2 or 3, then the R2s may be the same or different and the R3s may be the same or different, but when n is 0, Ar3 is a heterocyclic group which may have a substituent,

wherein the substituent group of Ar<sup>1</sup>, Ar<sup>2</sup>, Ar<sup>4</sup>, Ar<sup>5</sup>, a, R<sup>1</sup>, R<sup>2</sup>, R<sup>3</sup>, R<sup>4</sup> and R<sup>5</sup> are independently selected from the group consisting of an alkyl group, an alkenyl group, an alkoxy group, an amino group, a halogeno group, an aryl group, an aryloxy group and an arylthio group, and

wherein the substituent group of Ar<sup>3</sup> is selected from the group consisting of an alkyl group, an alkoxy group, an amino group, a halogeno group, an aryl group, an aryloxy group and an arylthio group.

(Previously Presented) An electrophotographic photoreceptor comprising: a conductive substrate formed of a conductive material; and

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a photosensitive layer disposed on the conductive substrate and containing oxotitanium phthalocyanine having a crystal form showing a diffraction peak at a Bragg angle  $2\theta$  ( $2\theta \pm 0.2^{\circ}$ ) of 27.2° in an X-ray diffraction spectrum and an enamine compound represented by the following general formula (2).

$$\begin{array}{c|c} c & \\ \hline \\ c & \\ \hline \\ d_j & a_m \end{array} \qquad \begin{array}{c} CH = CH - CH = Ar^4 \\ Ar^5 \end{array}$$

wherein "b", "c" and "d" each represent an alkyl group which may have a substituent, an alkoxy group which may have a substituent, a dialkylamino group which may have a substituent, an aryl group which may have a substituent, a halogen atom, or a hydrogen atom; i, k and j each indicate an integer of from 1 to 5; when i is 2 or more, then the "b"s may be the same or different and may bond to each other to form a cyclic structure; when k is 2 or more, then the "c"s may be the same or different and may bond to each other to form a cyclic structure; Ar<sup>4</sup> and Ar<sup>5</sup> each represent a hydrogen atom, an aryl group which may have a substituent, a heterocyclic group which may have a substituent, an aralkyl group which may have a substituent, or an alkyl group which may have a substituent, but it is excluded that Ar<sup>4</sup> and Ar<sup>5</sup> are hydrogen atoms at the same time; Ar<sup>4</sup> and Ar<sup>5</sup> may bond to each other via an atom or an atomic group to form a cyclic structure; "a" represents an alkyl group which may have a substituent, an alkoxy

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group which may have a substituent, a dialkylamino group which may have a substituent, an aryl group which may have a substituent, a halogen atom, or a hydrogen atom; m indicates an integer of from 1 to 6; when m is 2 or more, then the "a"s may be the same or different and may bond to each other to form a cyclic structure.

- 3. (Previously Presented) The electrophotographic photoreceptor of claim 1, wherein said oxotitanium phthalocyanine is oxotitanium phthalocyanine having a crystal form showing main diffraction peaks at the Bragg angles  $2\theta$  ( $2\theta \pm 0.2^{\circ}$ ) of 7.3°, 9.4°, 9.6°, 11.6°, 13.3°, 17.9°, 24.1°, and 27.2° in which a bundle of diffraction peaks formed by overlap of a diffraction peak at 9.4° and a diffraction peak at 9.6° shows a maximum intensity among the diffraction peaks described above, and the diffraction peak at 27.2° shows an intensity next to the maximum intensity in the X-ray diffraction spectrum.
- 4. (Previously Presented) The electrophotographic photoreceptor of claim 1, wherein said oxotitanium phthalocyanine is oxotitanium phthalocyanine having a crystal form showing main diffraction peaks at the Bragg angles  $2\theta$  ( $2\theta \pm 0.2^{\circ}$ ) of 9.5°, 9.7°, 11.7°, 15.0°, 23.5°, 24.1°, and 27.3° in the X-ray diffraction spectrum.
- 5. (Previously Presented) The electrophotographic photoreceptor of claim 1, wherein said oxotitanium phthalocyanine is oxotitanium phthalocyanine having a crystal form showing main diffraction peaks at the Bragg angles  $2\theta$  ( $2\theta \pm 0.2^{\circ}$ ) of  $9.0^{\circ}$ ,  $14.2^{\circ}$ , 23.9°, and 27.1° in the X-ray diffraction spectrum.
  - (Currently Amended) An electrophotographic photoreceptor comprising: a conductive substrate comprising a conductive material, and

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a photosensitive layer disposed on the conductive substrate and containing oxotitanium phthalocyanine and metal phthalocyanine other than said oxotitanium phthalocyanine and an enamine compound represented by the following general formula (1).

$$\begin{array}{c|c}
 & Ar^4 \\
\hline
 & Ar^2 \\
\hline
 & Ar^3 \\
\hline
 & a_m
\end{array}$$

$$Ar^{2} \qquad \qquad CR^{2} = CR^{3} \qquad Ar^{4}$$

$$Ar^{3} \qquad \qquad Ar^{5}$$

$$a_{m} \qquad \qquad (1)$$

wherein Ar<sup>1</sup> and Ar<sup>2</sup> each represent an aryl group or a heterocyclic group which may have a substituent; Ar<sup>3</sup> represents an aryl group which may have a substituent, a heterocyclic group which may have a substituent, an aralkyl group which may have a substituent, or an alkyl group which may have a substituent; Ar<sup>4</sup> and Ar<sup>5</sup> each represent a hydrogen atom, an aryl group which may have a substituent, a heterocyclic group which may have a substituent, an aralkyl group which may have a substituent, or an

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alkyl group which may have a substituent, but it is excluded that Ar<sup>4</sup> and Ar<sup>5</sup> are hydrogen atoms at the same time: Ar<sup>4</sup> and Ar<sup>5</sup> may bond to each other via an atom or an atomic group to form a cyclic structure; "a" represents an alkyl group which may have a substituent, an alkoxy group which may have a substituent, a dialkylamino group which may have a substituent, an aryl group which may have a substituent, a halogen atom, or a hydrogen atom; m indicates an integer of from 1 to 6; when m is 2 or more, then the "a"s may be the same or different and may bond to each other to form a cyclic structure; R<sup>1</sup> represents a hydrogen atom, a halogen atom, or an alkyl group which may have a substituent: R<sup>2</sup>, R<sup>3</sup> and R<sup>4</sup> each represent a hydrogen atom, an alkyl group which may have a substituent, an aryl group which may have a substituent, a heterocyclic group which may have a substituent, an aralkyl group which may have a substituent; n indicates an integer of from 0 to 3; when n is 2 or 3, then the R2s may be the same or different and the R3s may be the same or different, but when n is 0. Ar3 is a heterocyclic group which may have a substituent,

wherein the substituent group of Ar<sup>1</sup>, Ar<sup>2</sup>, Ar<sup>4</sup>, Ar<sup>5</sup>, a, R<sup>1</sup>, R<sup>2</sup>, R<sup>3</sup>, R<sup>4</sup> and R<sup>5</sup> are independently selected from the group consisting of an alkyl group, an alkenyl group, an alkoxy group, an amino group, a halogeno group, an aryl group, an aryloxy group and an arylthio group, and

wherein the substituent group of Ar<sup>3</sup> is selected from the group consisting of an alkyl group, an alkoxy group, an amino group, a halogeno group, an aryl group, an aryloxy group and an arylthio group.

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- 7. (Original) The electrophotographic photoreceptor of claim 6, wherein said metal phthalocyanine is mixed crystals of oxotitanium phthalocyanine and metal phthalocyanine other than said oxotitanium phthalocyanine.
- 8. (Original) The electrophotographic photoreceptor of claim 7, wherein the mixed crystals are mixed crystals of oxotitanium phthalocyanine and chlorogallium phthalocyanine.
- 9. (Original) The electrophotographic photoreceptor of claim 7, wherein the mixed crystals are mixed crystal of oxotitanium phthalocyanine and chloroindium phthalocyanine.
- 10. (Currently Amended) An electrophotographic photoreceptor comprising:
  an conductive substrate formed of a conductive material, and
  a photosensitive layer disposed on the conductive substrate and containing non-metal phthalocyanine and an enamine compound represented by the general formula
  (1)

wherein Ar<sup>1</sup> and Ar<sup>2</sup> each represent an aryl group or a heterocyclic group which may have a substituent; Ar<sup>3</sup> represents an aryl group which may have a substituent, a

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heterocyclic group which may have a substituent, an aralkyl group which may have a substituent, or an alkyl group which may have a substituent; Ar<sup>4</sup> and Ar<sup>5</sup> each represent a hydrogen atom, an aryl group which may have a substituent, a heterocyclic group which may have a substituent, an aralkyl group which may have a substituent, or an alkyl group which may have a substituent, but it is excluded that Ar<sup>4</sup> and Ar<sup>5</sup> are hydrogen atoms at the same time; Ar<sup>4</sup> and Ar<sup>5</sup> may bond to each other via an atom or an atomic group to form a cyclic structure; "a" represents an alkyl group which may have a substituent, an alkoxy group which may have a substituent, a dialkylamino group which may have a substituent, an aryl group which may have a substituent, a halogen atom, or a hydrogen atom; m indicates an integer of from 1 to 6; when m is 2 or more, then the "a"s may be the same or different and may bond to each other to form a cyclic structure: R<sup>1</sup> represents a hydrogen atom, a halogen atom, or an alkyl group which may have a substituent; R<sup>2</sup>, R<sup>3</sup> and R<sup>4</sup> each represent a hydrogen atom, an alkyl group which may have a substituent, an aryl group which may have a substituent, a heterocyclic group which may have a substituent, or an aralkyl group which may have a substituent; n indicates an integer of from 0 to 3; when n is 2 or 3, then the R<sup>2</sup>s may be the same or different and the R3s may be the same or different, but when n is 0, Ar3 is a heterocyclic group which may have a substituent[[.]],

wherein the substituent group of Ar<sup>1</sup>, Ar<sup>2</sup>, Ar<sup>4</sup>, Ar<sup>5</sup>, a, R<sup>1</sup>, R<sup>2</sup>, R<sup>3</sup>, R<sup>4</sup> and R<sup>5</sup> are independently selected from the group consisting of an alkyl group, an alkenyl group, an alkoxy group, an amino group, a halogeno group, an aryl group, an aryloxy group and an arylthio group, and

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aryloxy group and an arylthio group.

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wherein the substituent group of Ar<sup>3</sup> is selected from the group consisting of an alkyl group, an alkoxy group, an amino group, a halogeno group, an aryl group, an

- 11. (Original) The electrophotographic photoreceptor of claim 10, wherein said non-metal phthalocyanine is X-type non-metal phthalocyanine.
- 12. (Previously Presented) The electrophotographic photoreceptor of claim 10, wherein the photosensitive layer further contains metal phthalocyanine.
- 13. (Original) The electrophotographic photoreceptor of claim 12, wherein said non-metal phthalocyanine and said metal phthalocyanine constitute mixed crystals of non-metal phthalocyanine and metal phthalocyanine.
- (Previously Presented) The electrophotographic photoreceptor of claim 12, wherein said metal phthalocyanine is oxotitanium phthalocyanine.
  - 15. (Previously Presented) An electrophotographic photoreceptor comprising: a conductive substrate comprising a conductive material, and

a photosensitive layer disposed on the conductive substrate and containing two or more of metal phthalocyanines containing oxotitanium phthalocyanine and an enamine compound represented by the following general formula (2).

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wherein "b", "c" and "d" each represent an alkyl group which may have a substituent, an alkoxy group which may have a substituent, a dialkylamino group which may have a substituent, an aryl group which may have a substituent, a halogen atom, or a hydrogen atom; i, k and j each indicate an integer of from 1 to 5; when i is 2 or more, then the "b"s may be the same or different and may bond to each other to form a cyclic structure; when k is 2 or more, then the "c"s may be the same or different and may bond to each other to form a cyclic structure;

Ar<sup>4</sup> and Ar<sup>5</sup> each represent a hydrogen atom, an aryl group which may have a substituent, a heterocyclic group which may have a substituent, an aralkyl group which may have a substituent, or an alkyl group which may have a substituent, but it is excluded that Ar<sup>4</sup> and Ar<sup>5</sup> are hydrogen atoms at the same time; Ar<sup>4</sup> and Ar<sup>5</sup> may bond to each other via an atom or an atomic group to form a cyclic structure; "a" represents an alkyl group which may have a substituent, an alkoxy group which may have a substituent, a dialkylamino group which may have a substituent, an aryl group which may have a substituent, a halogen atom, or a hydrogen atom; m indicates an integer of

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from 1 to 6; when m is 2 or more, then the "a"s may be the same or different and may bond to each other to form a cyclic structure.

16. (Previously Presented) An electrophotographic image forming method comprising:

a step of charging the surface of an electrophotographic photoreceptor;

a step of applying exposure to the charged surface to form electrostatic latent images; and

a step of developing the electrostatic latent images,

wherein the electrophotographic photoreceptor of any one of claims 1, 2, 6, 10 and 15 is used as the electrophotographic photoreceptor.

- 17. (Previously Presented) The electrophotographic image forming method of claim 16, wherein a time from the start of exposure to the surface of the electrophotographic photoreceptor till the completion of the development for the electrostatic latent images is 90 msec or less.
  - 18. (Previously Presented) An electrophotographic apparatus comprising: the electrophotographic photoreceptor of any one of claims 1, 2, 6, 10 and 15; charging means for charging a surface of the electrophotographic photoreceptor; exposure means for applying exposure to the charged surface; and developing means for developing electrostatic latent images formed by exposure.
  - 19. (Previously Presented) An electrophotographic apparatus comprising: the electrophotographic photoreceptor of any one of claims 1, 2, 6, 10 and 15,

which is supported rotatably to an apparatus main body;

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photoreceptor driving means for rotationally driving the electrophotographic

photoreceptor at a rotational circumferential speed of Vp;

charging means for charging an outer circumferential surface of the

electrophotographic photoreceptor;

exposure means for applying exposure to the charged outer circumferential

surface:

developing means for developing electrostatic latent images formed by exposure;

and

a controller of the photoreceptor driving means which provides a operation such

that a value d (= L/Vp) is 90 msec or less, wherein L is a distance along the outer

circumferential surface of the electrophotographic photoreceptor from an exposure

position by the exposure means to a developing position by the developing means and

Vp is the rotational circumferential speed of the photoreceptor.

20. (Original) The electrophotographic apparatus of claim 19, wherein the

electrophotographic photoreceptor has a cylindrical or circular columnar shape, and a

diameter of the electrophotographic photoreceptor is 24 mm or more and 40 mm or

less.

21. (Previously Presented) The electrophotographic photoreceptor of claim 2,

wherein said oxotitanium phthalocyanine is oxotitanium phthalocyanine having a crystal

form showing main diffraction peaks at the Bragg angles  $2\theta$  ( $2\theta \pm 0.2^{\circ}$ ) of 7.3°, 9.4°,

9.6°, 11.6°, 13.3°, 17.9°, 24.1°, and 27.2° in which a bundle of diffraction peaks formed

by overlap of a diffraction peak at 9.4° and a diffraction peak at 9.6° shows a maximum

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intensity among the diffraction peaks described above, and the diffraction peak at 27.2° shows an intensity next to the maximum intensity in the X-ray diffraction spectrum.

- 22. (Previously Presented) The electrophotographic photoreceptor of claim 2, wherein said oxotitanium phthalocyanine is oxotitanium phthalocyanine having a crystal form showing main diffraction peaks at the Bragg angles  $2\theta$  ( $2\theta \pm 0.2^{\circ}$ ) of  $9.5^{\circ}$ ,  $9.7^{\circ}$ ,  $11.7^{\circ}$ ,  $15.0^{\circ}$ ,  $23.5^{\circ}$ ,  $24.1^{\circ}$ , and  $27.3^{\circ}$  in the X-ray diffraction spectrum.
- 23. (Previously Presented) The electrophotographic photoreceptor of claim 2, wherein said oxotitanium phthalocyanine is oxotitanium phthalocyanine having a crystal form showing main diffraction peaks at the Bragg angles  $2\theta$  ( $2\theta \pm 0.2^{\circ}$ ) of  $9.0^{\circ}$ ,  $14.2^{\circ}$ ,  $23.9^{\circ}$ , and  $27.1^{\circ}$  in the X-ray diffraction spectrum.